CLAIMS

1. Looped WDM optical network comprising a plurality of nodes (12,16) connected with a plurality or waveguides (11) to form an optical loop, the optical loop including optical amplifiers between sections of the loop (11) and further including ASE recirculation in the loop which is used for gain control, characterized in that at a point of the loop laser radiation is injected and allowed to circulate in the loop with the laser radiation being centered around a λ_{LINK} wavelength where it is desired that a lasing peak be generated.

2. Optical network in accordance with claim 1 characterized in that the laser radiation injection point is contained in a network amplification node (16).

3. Optical network in accordance with claim 2 characterized in that the injection point is upstream of an EDFA amplifier (13) contained in said amplification node.

4. Optical network in accordance with claim 1, 2 or claim 3 characterized in that wavelength λ_{LINK} is below the band of the channels transmitted in the network.

5. Optical network in accordance with claim 4 characterized in that the wavelength λ_{LINK} is around 1530 nm or 1538 nm.

6. Optical network in accordance with any of claims 1 to 3 characterized in that the wavelength λ_{LINK} is above the band of the signal channels transmitted in the network.

7. Optical network in accordance with claim 6 characterized in that the wavelength λ_{LINK} is around 1564 nm.

8. Optical network in accordance with any preceding claim characterized in that along the loop there is at least one high-pass optical filter (20) with cut-off wavelength above the wavelength of an ASE peak of the network but below the wavelength λ_{LINK} and the network channel signal band.

9. Optical network in accordance with claim 8 characterized in that the optical filter (20) has a cut-off wavelength for eliminating the accumulation of ASE below 1535 nm and the wavelength λ_{LINK} is at a wavelength chosen in an interval included between the filter cut-off wavelength and the WDM signal band.

10. Optical network in accordance with claim 8 characterized in that the optical filter (20) has a cut-off wavelength for eliminating the accumulation of ASE below 1538 nm and the wavelength λ_{LINK} is slightly higher than the WDM signal band.

11. Optical network in accordance with any of claims 8 to 10 characterized in that the high-pass optical filter (20) is present in a plurality of network amplifier nodes.

12. Optical network in accordance with any preceding claim characterized in that the laser radiation is produced by a redundant laser generation system (17,18,19) which comprises a plurality of lasers (17,18).

13. Optical network in accordance with claim 12 characterized in that the redundant laser system comprises two lasers (17,18) which are adapted to be selectively and alternatively activated.

14. Optical network in accordance with any preceding claim characterized in that a plurality of amplification nodes distributed along the loop comprise one laser source (24) each for input into the loop of laser radiation with emission wavelength around λ_{LINK} and laser source control means (21,22,23) which detect the lasing light input power at the node and activate the laser source (24) upon decay of said power to below a predetermined threshold.

15. Optical network in accordance with claim 14 characterized in that the laser source has an output power of at least approximately 10 dBm.

16. Optical network in accordance with claim 15 characterized in that the control means comprise a splitter

(21) which takes a fraction of the optical power input and sends it to a band-pass filter (22) centered around λ_{LINK} and with a band at -3 dB on the order of a few nm output from the filter (22) with there being a threshold detector (23) which receives the filtered signal and activates the laser source (24) upon decay of the signal to below said predetermined threshold with a second splitter (27) conveying the laser radiation produced by the source (24) together with signals input to the node amplification means (28).

17. Optical network in accordance with any preceding claim characterized in that the laser radiation powers are chosen between -5 dBm and +10 dBm.

18. Method for link control in a looped WDM optical network comprising an optical loop with optical amplifiers between loop sections and with ASE recirculation in the loop in accordance with which the laser radiation centered around a wavelength λ_{LINK} where it is desired that a lasing peak be generated is injected into a loop point and made to circulate in the network.

19. Method in accordance with claim 18 in accordance with which along the network is performed a high-pass filtering with cut-off wavelength higher than the wavelength of an ASE peak in the network but lower than said λ_{LINK} wavelength and the signal-channel band in the network.

20. Method in accordance with claim 18 or claim 19 in accordance with which the laser radiation powers are chosen between -5 dBm and +10 dBm.